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EPA Region 10 Laboratory
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MARINE POWER AND EQUIPMENT COMPANY
SEDIMENT TOXICITY TEST RESULTS

Project Title:

Toxicity of Sediments Collected from Marine Power and Equipment Company Sites on Lake Union and the Duwamish Waterway

Date of Testing:

February 19 - March 2, 1987

Testing Facility:

EPA Region 10 Laboratory
P.O. Box 549
Manchester, Washington 98353

Analysts:

Joseph M. Cummins, Aquatic Biologist
Carolyn E. Gangmark, Aquatic Biologist

Identification of Samples Tested:

1. Lake Union Sediment #1- 25 feet west of Marine Power and Equipment (MPE) dry dock #3. (EPA 87060040)

2. Lake Union Sediment #2- Between 50-ton craneway and MPE dry dock # 2. (EPA 87060041)

3. Lake Union Sediment #3- Between MPE dry dock #3 and MPE dry dock #6. (EPA 87060042)

4. Duwamish Waterway Sediment #1- Station #1 (EPA 87060043)

5. Duwamish Waterway Sediment #2- Station #3. End of synchro lift. (EPA 87060044)

6. Duwamish Waterway Sediment #3- Station #4. Northwest corner of synchro lift. (EPA 87060045)

Sample Collection:

Bottom sediments were collected from Marine Power and Equipment Company sites on Lake Union and the Duwamish Waterway on February 5 and 6, 1987, respectively. The samples were collected by EPA divers, placed in chemically-clean, 1-gal glass jars, and transported to the EPA Region 10 Laboratory in ice chests. At the Laboratory, the samples were stored at 4°C until prepared for testing.

Table 1. Responses of Freshwater Amphipods, Hyalella azteca, and Daphnids, Daphnia pulex, to Sediments Collected from the Lake Union Marine Power and Equipment Company Site, February 5, 1987.

Sample Description	EPA Lab Number	Mean Amphipod Responses[a] (Day 10)		Mean Daphnid Responses[a] (Day 2)	
		No. of Survivors	Percent Survival	No. of Survivors	Percent Survival
Lake Union Sediment #1	8706040	7.8	78	3.2	64
Lake Union Sediment #2	87060041	6.2	62	3.4	68
Lake Union Sediment #3	87060042	8.6	86	4.2	84
Control (Washed/ Dried West Beach Sand)	--------	7.8	78	4.6	92

[a] Mean of five replicates.
Ten H. azteca per replicate; five D. pulex per replicate.

Note: Cadmium Reference Toxicant Results -
H. azteca 96-hr LC50 (25.5 ug Cd/L) and
95% Confidence Limits (17.9 - 38.4 ug Cd/L)

D. pulex 48-hr LC50 (38.9 ug Cd/L) and
95% Confidence Limits (Undefined - 54.1 Cd ug/L)

Table 2. Responses of the Marine Amphipod, Rhepoxynius abronius, to Sediments Collected from the Duwamish Waterway Marine Power and Equipment Company Site, February 6, 1987.

Sample Description	EPA Lab Number	Mean Amphipod Responses[a] (Day 10)			
		No. of Survivors	Percent Survival	No. of Survivors Reburying[b]	Percent Reburial
Duwamish Waterway Sediment #1	87060043	16.6	83.0	16.2	97.6
Duwamish Waterway Sediment #2	87060044	15.0	75.0	14.6	97.3
Duwamish Waterway Sediment #3	87060045	14.6	73.0	14.0	95.9
Control (Washed/ Dried West Beach Sand)	--------	17.8	89.0	17.8	100
Control (Fresh West Beach Sand)	--------	18.3	91.7	18.3	100

a
Mean of five replicates, with the exception of the Control (Fresh West Beach Sand) which is the mean of three replicates.
Twenty R. abronius per replicate.

b
Percent of survivors reburying in Control (Fresh West Beach Sand) in one hour.

Note: Cadmium Reference Toxicant Results -
R. abronius, 96-hr LC50 (1.03 mg Cd/L) and
95% Confidence Limits (0.59 - 1.49 mg Cd/L).